UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/673,138	09/30/2003	Andrej S. Mitrovic	236518US6YA	3830

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EXAMINER
SAXENA, AKASH

ART UNIT	PAPER NUMBER
2128	

DATE MAILED: 09/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/673,138	MITROVIC, ANDREJ S.
	Examiner	Art Unit	
	Akash Saxena	2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING·DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ · Responsive to communication(s) filed on _30 September 2003_.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-44_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-44_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _30 September 2003_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _12/10/03_.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

1. Claims 1-44 have been presented for examination based on the application filed on 30th September 2003.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claim 44 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim 44 discloses "computer readable medium" which is defined in the specification (Pg.32-33 [00103] Line1-9) to include tangible items ("non volatile media" and "volatile media") and items that are non-tangible ("transmission media"). Therefore the claim as whole is not directed towards a tangible medium. One possible suggested way to overcome this rejection is to replace "computer readable medium" with "non volatile media" and "volatile media".

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

1. **Claim 1 provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 10/673,583.**

Application No. 10/673,138	Application No. 10/673,583
A method of facilitating a process performed by a semiconductor-processing tool, comprising:	A method of facilitating a process performed by a semiconductor processing tool, comprising:
inputting data relating to a process performed by the semiconductor processing tool;	inputting data relating to a process performed by the semiconductor processing tool;
inputting a first principles physical model relating to the semiconductor processing tool;	inputting a first principles physical model relating to the semiconductor processing tool;
performing first principles simulation using the input data and the physical model to provide a <u>first principles simulation result</u>; and	performing first principles simulation using the input data and the physical model to provide a <u>virtual sensor measurement relating to the process performed by the semiconductor processing tool; and</u>
using the <u>first principles simulation result</u> to facilitate the process performed by the semiconductor processing tool.	using the <u>virtual sensor measurement to</u> facilitate the process performed by the semiconductor processing tool.

Although the conflicting claims are not identical, they are not patentably distinct

from each other because both the virtual sensor measurements are the same

simulation result (Specification: Page 13[0051] Last sentence). This is a <u>provisional</u>

obviousness-type double patenting rejection because the conflicting claims have not

in fact been patented.

2. **Claim 1 provisionally rejected under the judicially created doctrine of**

 obviousness-type double patenting as being unpatentable over claim 1 of

 copending Application No. 10/673,501.

Application No. 10/673,138	Application No. 10/673,501
A method of facilitating a process performed by a semiconductor-processing tool, comprising:	A method of facilitating a process performed by a semiconductor processing tool, comprising:
inputting data relating to a process performed by the semiconductor processing tool;	inputting data relating to a process performed by the semiconductor processing tool;
inputting a first principles physical model relating to the semiconductor processing tool;	inputting a first principles physical model relating to the semiconductor processing tool;
performing first principles simulation using the input data and the physical model to provide a <u>first principles simulation result</u>; and	performing first principles simulation using the input data and the physical model to provide a <u>simulation result for the process performed by the semiconductor processing tool</u>; and
using the <u>first principles simulation result to facilitate</u> the process performed by the semiconductor processing tool.	using the <u>simulation result as part of a data set that characterizes</u> the process performed by the semiconductor processing tool.

Although the conflicting claims are not identical, they are not patentably distinct

from each other because both claims perform the same steps and use the simulation

result to facilitate the semiconductor-processing tool. Characterization is also same

as facilitating (Specification: Page 6[0032]). This is a <u>provisional</u> obviousness-type

double patenting rejection because the conflicting claims have not in fact been

patented.

Further, all the two non-statutory obviousness-type double patenting rejections

for the application have substantially same or identical specification. Also,

independent claims belonging different statutory category, having substantially

similar limitations, in the three co-pending applications may also have similar double

patenting rejections.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form

the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. **Claims 1-44 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S.**

   Patent No. 6,802,045 issued to Sonderman et al (Sonderman hereafter).

Regarding Claim 1

Sonderman teaches a method to facilitate a process performed by a semiconductor-

processing tool (Sonderman: Summary, at least in Col.2 Lines 10-17;Col.3 Lines 45-

49) by inputting data relating to the process performed by the semiconductor-

processing tool (Sonderman: at least in Col.3 Lines 50-67). Further, Sonderman

teaches inputting the first principle physical model relating to the semiconductor-

processing tool (Sonderman: at least in Col.5 Lines 11-17; 49-67) as device physics

model, a process model and an equipment model. Further, Sonderman teaches

performing first principle simulation using the input data and the physical model to

provide simulation results for the process performed by the semiconductor–

processing tool (Sonderman: at least in Col.5-7). Further, Sonderman teaches using

the simulation results to facilitate the process performed by the semiconductor-

processing tool (Sonderman: at least in Col.4 Lines 48-64; Fig.1-8).

Regarding Claim 2

Sonderman teaches directly inputting the data relating to the process performed by the semiconductor-processing tool from at least one of physical sensor (eg. Scatterometry data, overlay data, dimensional data) and a metrology tool physically mounted on the semiconductor-processing tool (Sonderman: at least in Col.4 Lines 31-48; Col.4-8; Fig.1, 7).

Regarding Claims 3-5

Sonderman teaches indirectly inputting the data relating to the process performed by the semiconductor-processing tool from one of the manual input devices and a database as manual fashion data retrieval and automatic data retrieval; inputting data recorded from the previous run; inputting the data set by a simulation operator ((Sonderman: at least in Fig.1-3 Col.1; Col.4-7).

Regarding Claims 6-9

Sonderman teaches inputting data relating to at least one of the physical characteristics of the semiconductor-processing tool and semiconductor tool environment, data relating to at east on of the characteristics and a result of a process performed by the semiconductor processing tool; inputting a spatially resolved model (as modified models) of the geometry of the semiconductor processing tool; inputting fundamental equations necessary to perform first principle simulation for the desired simulation result (Sonderman: at least in Col.5 Lines 10-18; Col.6 Lines 48-63; Col.9 (equations); Col.5-9; Fig 1-3).

Regarding Claim 10

Sonderman teaches performing interaction concurrently between the simulation
environment (first principle simulation) and the semiconductor-processing tool
(Sonderman: Fig.2; Col.4 Lines 48-63).

Regarding Claims 11-13

Sonderman teaches performing first principle simulation not concurrently with the
process performed; inputting data from at least one initial condition recorded from a
previous process performed (Sonderman: at least in Col.5-8; Fig.3-4).

Regarding Claims 14-18

Sonderman teaches using a network of interconnected resources to perform at least
one of the process steps recited in claim 1; using code parallelization among
interconnected computational resources to share the computational load of the first
principle simulation; sharing simulation information among the interconnected
resources to facilitate a process by the semiconductor-processing tool; sharing
simulation results among the interconnected resources to reduce redundant
execution of substantially similar first principle simulation by different resources;
sharing information comprising model changes among the interconnected resources
to reduce the redundant refinements of first simulation by different resources
(Sonderman: Fig.1-3, computer code software is described in Col.9 Lines 58
onward; Col.5-8).

Regarding Claims 19-20

Sonderman teaches remote access to computational and storage resources
(Sonderman: Col.9 Line 58-Col.10 Line 31) where in wide area network is art
inherent.

Regarding Claim 21

System claim 21 discloses substantially similar limitations as method claim 1 and is
rejected for the same reasons as claim 1.

Regarding Claim 22

System claim 22 discloses substantially similar limitations as method claim 2 and is
rejected for the same reasons as claim 2.

Regarding Claims 23-25

System claims 23-25 disclose substantially similar limitations as method claims 3-5
and are rejected for the same reasons as claims 3-5.

Regarding Claims 26-29

System claims 26-29 disclose substantially similar limitations as method claims 6-9
and are rejected for the same reasons as claims 6-9.

Regarding Claim 30

System claim 30 discloses substantially similar limitations as method claim 10 and is
rejected for the same reasons as claim 10.

Regarding Claims 31-33

System claims 31-33 disclose substantially similar limitations as method claims 11-
13 and are rejected for the same reasons as claims 11-13.

Regarding Claims 34-38

System claims 34-38 disclose substantially similar limitations as method claims 14-18 and are rejected for the same reasons as claims 14-18.

Regarding Claims 39-40

System claims 39-40 disclose substantially similar limitations as method claims 19-20 and are rejected for the same reasons as claims 19-20.

Regarding Claim 41

System claim 41 discloses substantially similar limitations as method claim 1 and is rejected for the same reasons as claim 1.

Regarding Claim 42

System claim 42 discloses substantially similar limitations as method claim 15 and is rejected for the same reasons as claim 15.

Regarding Claim 43

System claim 43 discloses substantially similar limitations as method claim 16 and is rejected for the same reasons as claim 16.

Regarding Claim 44

System claim 44 discloses substantially similar limitations as method claim 1 and is rejected for the same reasons as claim 1.

Conclusion

4. All claims are rejected.

5. **Examiner's Note:** Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in their entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

In the case of amending the claimed invention, Applicant is respectfully requested to indicate the portion(s) of the specification which dictate(s) the structure relied on for proper interpretation and also to verify and ascertain the metes and bounds of the claimed invention.
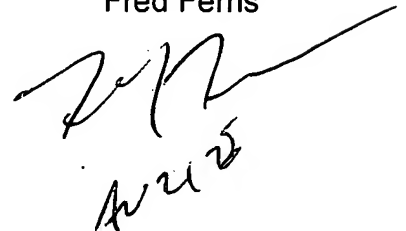
Communication

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Akash Saxena whose telephone number is (571) 272-

8351. The examiner can normally be reached on 8:30 - 5:00 PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Jean R. Homere can be reached on (571)272-3780. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

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you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

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Monday, September 05, 2005

Fred Ferris